Re: Simultaneous hybrid carotid stenting and coronary bypass surgery versus concomitant open carotid and coronary bypass surgery: a pilot, feasibility study

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Stroke after coronary artery bypass grafting (CABG) is a rare but feared complication associated with significantly higher mortality and the potential for debilitating functional sequelae. All necessary measures should, therefore, be taken to decrease the rate of post-CABG stroke. Risk factors include: previous stroke, diabetes, hypertension, peripheral vascular disease and renal failure [1]. However, the aetiology of stroke after CABG is multifactorial, including manipulation of an atherosclerotic ascending aorta, diffuse cerebrovascular disease, atrial fibrillation and a perioperative inflammatory state. An embolic aetiology accounts for two-thirds of strokes after CABG, with hypoperfusion accounting for only 9% [2]. Carotid bifurcation stenosis is a recognized risk factor, but seems to be more of a marker of global atherosclerotic burden rather than a direct cause of stroke. Carotid stenosis is associated with increasing age, multiple cardiovascular risk factors and diffuse atherosclerotic disease extending to intracerebral territories and the ascending aorta.

In this issue of the Eur J Cardiothoracic Surg, Micovic et al. [3] have published results from a very small, randomized study of simultaneous hybrid carotid stenting (CAS) and CABG versus concomitant open carotid endarterectomy (CEA) and CABG involving only 20 low-risk patients with three-vessel or left main stem disease in addition to a carotid artery stenosis of >50% in symptomatic patients or >80% in asymptomatic patients. Patients were randomized to hybrid sequential CAS and CABG (N = 10), or concomitant CEA and CABG (N = 10). All except one patient underwent on-pump CABG. Only two and three patients (respectively) in each arm had suffered a previous stroke/transient ischaemic attack (i.e. the majority were asymptomatic), but the proportion of patients with severe bilateral stenosis was not reported. One patient died of multiorgan failure 42 days after combined surgery. A second patient (undergoing CEA + CABG) suffered a stroke 4 days after surgery, but in the territory of the non-operated contralateral carotid artery, which did not have significant carotid disease. Despite the trial being significantly underpowered, the authors concluded that CAS and coronary surgery was feasible and had similar early postoperative results compared with CEA + CABG.

This study raises a number of important issues. First, it is unclear why the authors chose to undertake an interim analysis after only 20 patients had been recruited. This was entirely reasonable for safety analyses. However, no power calculations were presented and it should have been obvious that no meaningful conclusions could be drawn by reporting data from such a small cohort of heterogeneous patients. Second is the hypothesis upon which this study was based. The authors have clearly shown that either treatment strategy was ‘feasible’, but not whether any additional intervention was actually warranted for the majority of patients.

The authors have based this study upon the premise that (i) predominantly asymptomatic carotid disease is an important cause of post-CABG stroke and that (ii) prophylactic CAS or CEA can reduce this risk. Neither, however, is sufficiently proved, especially in asymptomatic patients. The authors have cited post-CABG stroke rates of up to 11% in neurologically asymptomatic patients in order to justify intervention, but the latter statistic was observed only in patients with carotid occlusion (which is inoperable). In fact, a recent meta-analysis of all published data observed that the risk of procedural stroke in patients undergoing isolated CABG with a unilateral asymptomatic carotid stenosis was extremely small [4]. Second, three natural history studies (>23 500 patients undergoing isolated CABG) have now shown that 95% of observed strokes could not have been attributed to any underlying carotid disease [5–7]. These data seriously challenge any rationale for offering prophylactic CEA or CAS to CABG to patients with asymptomatic carotid disease (especially unilateral). The ESC/EACTS 2010 Guidelines on Myocardial Revascularization recommend carotid revascularization in patients presenting for CABG with a previous transient ischaemic attack or minor stroke in association with a 70–99% stenosis (Evidence Class IIc). Conversely, in patients scheduled for CABG with asymptomatic carotid disease, carotid revascularization may be considered in males with bilateral 70–99% carotid artery stenoses or contralateral occlusion, provided predicted life expectancy exceeds 5 years (Classes IIb and C) [8].

In summary, this trial confirms that prophylactic carotid interventions are feasible, but not whether they are warranted, especially in patients with unilateral asymptomatic carotid disease who...
comprise the vast majority of patients who are currently being considered for synchronous or staged interventions.

REFERENCES


